

The Reinstallation and Conservation of Malay Traditional Buildings

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Abstract

The responsibility of cultural heritage conservation in Malaysia is under National Heritage Department (NHD). In the year 2013 NHD has produced historic building conservation guideline which embodied the International Council on Monuments and Sites (ICOMOS) charters as a reference. However current conservation practice focuses more on in-situ restoration projects. According to ICOMOS, there are also conservation approaches on old buildings that associated with replacing, reconstruction, and reinstallation work. All these approaches are considering the old timber building and structure restoration. Referred to the previous conservation works that have been done, this paper introduces the conservation methodology specific for Malay traditional timber buildings conservation. The conservation decision of Malay traditional Timber buildings was based on two conditions; i) move to a new site which involves dismantling, transportation, repair, and reinstallation; and ii) remain at the original site which involves dismantling and repair, and repair as-built. This paper will discuss on both conditions and conservation approach in preserving the traditional timber building.

Keywords: Relocating, Dismantle, Reinstallation, Traditional Malay Building, Conservation

Introduction

Since a past few decades, the traditional Malay buildings has become extinction due to the inclusion of modern technologies in construction. Besides, the lack of raw materials, namely wood causing an increasing the price of this natural materials. The local land developments and changes in topography have caused these buildings to be demolished. Thus, these factors have led to the extinction of the builders (*tukang*) and carvers who involved in traditional construction. Therefore, conservation work is urgently needed to extend the life of the traditional Malay buildings so that the cultural values can be maintained for historical evidence of the present and the future reference (Kamal, Ab Wahab, & Che Ahmad, 2004; Siti Norlizaiha Harun, 2011). Today, the initiatives that have been done to save this heritage is by reallocating it which involved three main phases of work; dismantling, transporting, and reinstalling. Due to lack of detail standard guideline in reallocating the traditional building in Malaysia, the conservator involved used their own rational method in dismantling to reinstall the building at the new site. Most of the reallocating of a traditional building that has been done in Malaysia are using the coding on each building components where this method is suggested by most international conservation guidelines (Wulf Killmann, Sickinger, & Thong, 1994). However, in certain conservation project have its own specific case which facing the different topography, weather condition, and local regulation. This paper is a part of on-going research preparing a specific conservation guideline for relocating traditional Malay buildings in Malaysia.

Conservation Through Relocate of Heritage Timber Building in Malaysia

The early conservation awareness movement in Malaysia started in 1945 when General Sir Gerald Templer made a policy speech emphasizing the need to preserve the arts and crafts of Malaya (Peninsular Malaysia) have led to an establishment of the Arts Council of Malaya. The Arts Council successfully stimulated the Malayan artist and craftsmen. The first Malay traditional building was restored lead by Sheppard is Ampang Tinggi Palace where a derelict old Malay palace and turned it into the Negeri Sembilan State Museum in 1953 (Zuraini Md Ali, 2016). It is also the first adaptive reuse of old Malay traditional building recorded in Malaysia. Around 10 years later, the conservation of Kelantan royal building by Sheppard is Istana Tengku Long Palace or also known as Tele House (*Rumah Tele*) (Zuraini Md Ali, 2016). The restoration is according an in-depth study by Sheppard. In 1967, another conservation project of the traditional building is safeguarding Kampung Laut Mosque (*Masjid Kampung Laut*) which facing a serious river bank erosion (Zuraini Md Ali, 2016). These are the earliest recorded conservation projects in Malaysia that involve relocating work. Relocating the timber building requires three main phases of work which dismantling, transport, and reinstallation.

Kampung Laut Mosque is the oldest mosque in south-east Asia. It was built in the 17th century, without using any iron nails which same as other early Malay traditional building that build before the 20th century. The Masjid Kampung Laut has a similar roof design with the Demak Mosque in Java, Kono Mosque in Champa, Nad Tanjung Mosque and Wadi Hussein Mosque in Thailand (National Archive of Malaysia, 2017). The historical significance of this most is related with the early Islamic influence in Peninsular Malaysia. The mosque is believed to have been built by Islamic missionaries who travel back and forth between Champa and Java with the help of locals. The original site of this mosque is located in Kampung Laut, Tumpat on the banks of the Kelantan River (Tumpat District Council, 2017). Until 1966, this mosque was used as the main place of Islamic worship by the residents of Kampung Laut. However, this mosque was damaged by the flood that struck Kelantan State at the end of 1966 and early 1967. The State Government has closed the mosque and built a new mosque in a safer place. In November 1967, the State Government in collaboration with the Malaysian Historical Society of the National Museum had renovated the Masjid Kampung Laut Mosque and re-assembled at its new site in Nilam Puri in its original form and used all the original components, as far as possible (Tumpat District Council, 2017).



Figure 1: Kampung Laut Mosque. Source: Tumpat District Council, 2017

The Potential of Traditional Malay Timber Building to Translocation Project

The Malay traditional buildings are designed to be dismantled and moved (Abdul Halim Nasir, 1985; Norhasandi Mat, 2010; Yuan, 1987, Gibbs et al, 1987). From previous literature there are several design characteristics that give traditional Malay houses to be disassembled into parts as for storage or relocated. There are 6 factors that make Malay traditional buildings potentially can be relocated.

- i. The highly durable timber species used in construction allows the Malay house components can last for many years (Abdul Halim Nasir, 1985; Norhasandi Mat, 2010). Chengal wood (*Neobalanocarpus heimii*) is the most popular wood species for Malay building structures. As an alternative, where chengal was in short supply, chengal mas (*Hopea odorata*) and chengal batu (*Hopea ferrea*) are used. The traditional builders (*tukang*) through their inheritance wisdom believed that these wood species are highly durable. Today, this old belief has been proven by scientific test by Forest Research Institute of Malaysia (Wulf Killmann et al., 1994).
- ii. The typical Malay building design prevents moisture and sunlight from the tropical climate that helps for a longer life spent to the exterior. Humidity is a decaying agent for wood for invading insects and fungus. Ultraviolet rays from the sunlight help degradation to the wood surface. The typical features of Malay building are the wide roof overhangs at both the eaves and gables preventing the sidewalls from direct sunlight and rain. In addition, Malay houses are compatible with tropical weather. High floor positioning avoids attacks from ground surfaces such as insects and moisture. The raised floor gives the good air ventilation for the buildings, constantly drying the building components (Wulf Killmann et al., 1994). Both resistance properties reduce the decaying components of the building and It's still can be reused even after dismantling, transporting and reinstalling at the new site.
- iii. The jointing system of the buildings is constructed without any nails. According to experienced carpenter, Mohd Pauzi, 2017 perhaps the wooden part will be broken when it is removed with force. Furthermore, rusty nails make it difficult to withdraw. Timber jointing with nail is considered permanent joint. In old time the timber jointings are tightened with rattan bond and dowels or pegs. The joints are also often secured wedges (*baji*), which are tightened from time to time. (Wulf Killmann et al., 1994; Yuan, 2002). This allows the building to be dismantled into smaller components and allows it transported to another place if necessary.

iv. Small-scale buildings can be just lifted entirely by manpower without dismantling to be removed in the village area. There is a special ritual performed in the old time to move the house when village affairs required called 'pindah rumah' when village affairs required.

v. Malay building is designed in a modular system. Large-scale houses can be separated into smaller blocks (Kamal et al., 2004). An example is the Tele House building in the Terengganu palace compound that has been relocated at the Terengganu Museum and partly at Malaysia National Museum in Kuala Lumpur. This also is always the case when the first owner of the house dies and has been taken over by their own children separating their parents' house for their own family use.

vi. Most of the Malay buildings are single and loose. According to past records, the Malay house is directly set up on a flat ground. The columns stand on the footing (alas/sendir/pelapik) of natural stone or hardwood (Wulf Killmann et al., 1994). Its construction is not attached to the topography like embedded underground or fixed on a permanent surface such as a rock hill or a cave, allowing it to be dismantling without damaging their parts. This is another important factor that allows Malay buildings can be relocated.

The Traditional Malay Building Conservation

According to National Heritage Department of Malaysia and Malaysia Heritage Trust, the heritage buildings in Malaysia are can be classified into 9 categories. Based on the current literature published, the Malay traditional buildings in Malaysia only consist of three groups, which residential, religious building and palace. Table 1 below shows the list of prominent traditional timber buildings in Malaysia. The list is stated the year built, the year conserved and marked (✓) for the relocated buildings and (x) for the remain on original site. The statistic shows 18 over 39 of the buildings are have relocated to safeguarding the architecture and historical significant. Most of the original sites have undergone high development pressures apart from topographic factors.

	Heritage Building Categories	Malay Traditional Building		Year Conserved	Relocated	Remained
	Palaces					
1		1918	Istana Kenangan, Kuala Kangsar	1977		x
2		1855	Istana Jahar ,Kota Bharu, Kelantan			x
3		1865	Istana Ampang Tinggi, Negeri Sembilan.	1953	✓	
4		1908	Istana Seri Menanti, Negeri Sembilan	2017		x
5		1850	Istana Tengku Long, Muzium Terengganu	1986	✓	
6		1880	Istana Tengku Anjang Zahab, Terengganu			x
	Mosques					
7		1500's	Masjid Kampung Hulu, Melaka			x
8		1921	Masjid Tanjung Kling, Melaka			x
9		1850	Masjid Kampung Duyung ,Melaka			x
10		1721	Masjid Tengkeru ,Melaka Tengah			x
11		1902	Masjid Lama Machap, Melaka			x
12		1808	Masjid Lebuah Acheh			x
13		1853	Masjid Serkam Pantai Melaka			x
14		1830	Masjid Kampung Tuan, Chukai			x
15		17th century	Masjid Kampung Laut, Kelantan	1968	✓	
16		1936	Masjid Kampung Kuala Dal, Perak	2009		x
17			Masjid Tanjung Sembeling, UPM Museum,Kuala Pilah	2011	✓	
	Houses					
18		1956	Memorial Tunku Abdul Rahman Putra			x
19		1914	Rumah Penghulu Md. Nattar, Melaka			x
20		1888	Rumah Tele 2, Muzium Terengganu	1970	✓	
21			Rumah Guru Quran, Muzium Terengganu		✓	
22			Rumah Tengku Ngah Aishah, Muzium Terengganu		✓	
23		1901	Rumah Perak, UPM		✓	
24			Rumah Negeri Sembilan, UPM		✓	
25			Rumah Terengganu, UPM		✓	
26			Rumah Tok Sedara Bongsu, UiTM Perak			x
27			Rumah Kutai, Kuala Kangsar, Perak.			x
28		1930	Rumah Penghulu Abu Seman, KL.		✓	
29		1920's	Rumah Penghulu Pahang, UPM		✓	
30		1902	Pahang House,Pekan Museum, Pahang	1990	✓	
31			Terengganu House, FRIM, Kuala Lumpur	1987	✓	
32		Early 20th C	Alor Gajah House, FRIM, Kuala Lumpur	1987	✓	
33		1884	Istana 1, Muzium Negara	1974	✓	
34		1850	Rumah Haji Su, Losong Terengganu	2014		x
35		1855	Rumah Bujang Serambi Selasar, Terengganu Museum	1997	✓	
36			Rumah Hj Hassanah Kasim, Terengganu Museum	1986	✓	
				Total (unit)	18	18

Table 1: List of Prominent Heritage Timber Buildings in Malaysia. Source: A. Ghafar Ahmad (1997), Siti Norlizaiha Harun (2004), Kamarul Shahril Kamal (2009), Malaysia Heritage Department, Malaysia Museum Department, Ministry of Tourism and Culture Malaysia (2007)

Conservation Process

Conservation is a process of keeping and monitoring a heritage building from being destroyed or restored without systematic planning and management. Conservation involves works that try to preserve the original condition of a building and heritage sites as well as to sustain their cultural values. The maintenance process includes conservation, upgrading, reconstruction and adaptive reused, and usually, more than one combination is required. The conservation process is an extension of the age of the building so that the building remains functional (National Heritage Act 645, 2006). The main purpose of conservation is to safeguard the cultural importance by maintaining the fabric through proper conservation methods in order to prolong the life spend of the building and to function properly. According to the National Heritage Department of Malaysia (2016), the process of conservation of heritage buildings practiced today is divided into five workplaces: survey overview, dilapidation survey, documentation, conservation works, and maintenance plan. However, the outlines of these guidelines are quite general and focus more on conservation work done on-site. While the work of translocation of the timber building requires different attention because it involves three main stages of work: dismantling, moving and reinstallation. Figure 3 below shows the improved guidelines by enhancing the specific framework to better suit with the work of translocation of a timber building.

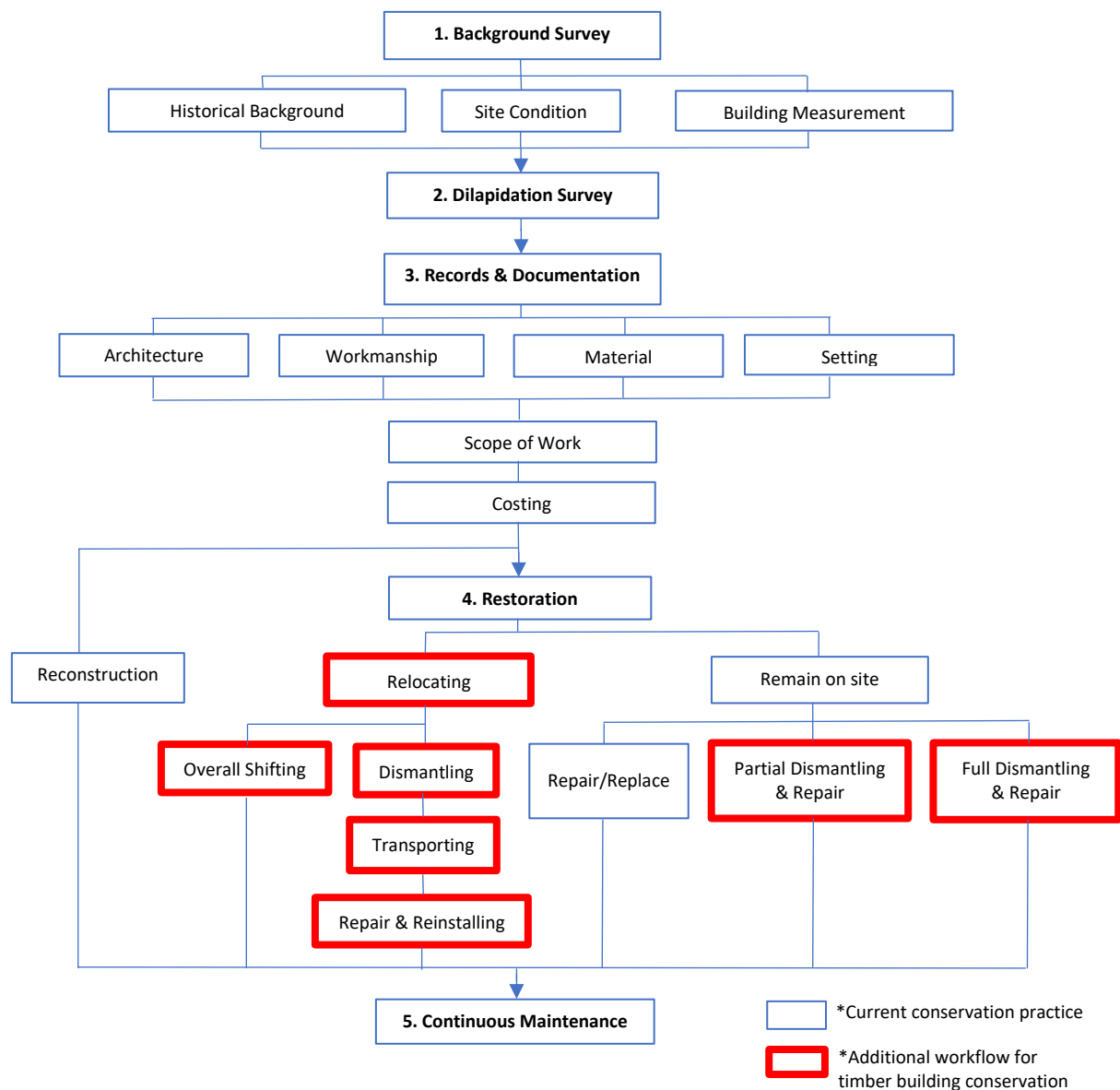


Figure 3: Malay Traditional Building Conservation Approach Framework. Source: modification from Siti Norlizaiha Harun, 2005 and Malaysia Heritage Department, 2016

i. Background survey: The background survey is conducted on early stage to gather information about the building including the location, historical background, the significant values, current situation and the previous owner's background (National Heritage Department, 2016). According to one of the practitioners of traditional timber building reinstallation, Mohd Pauzi (2017) describes the overview survey is to see the condition of the building in the original place to ensure the suitability of new sites in terms of area size, the overall dimension of the building, topography, natural lighting and so on. Furthermore, the new site should provide a setting that compatible with cultural heritage and values and a compatible used as suggested by UNESCO, Burra Charter, and New Zealand Charter.

ii. Dilapidation Survey: In the next stage, the dilapidation survey was conducted to identify the level of damage of the building. Dilapidation survey covers the main structure of the building, floor area, wall part, and roof. This will determine in submitting the proposed conservation method. Building defect levels are intended to ensure the buildings that will be dismantling and moving may survive from intervention throughout the process. From this survey data, it also determines which component of the building either to reuse or to replicate. The result of the inspection will be determining the building is considered capable of being moved or not. Buildings that are too fragile due to decay are not worth to translocate because it involves a lot of replacement of damaged parts (Mohd Pauzi, 2017).

iii. Records and Documentation: Measured drawing is prepared for reference throughout the building process from dismantling to reinstalling. The drawing for each building components are prepared. In addition, the provided drawing measures required in the supporting documents determine the scope of work, methods, and techniques of building conservation in turn affecting the cost estimates (National Heritage Department, 2016). The records in a variety of media such as photography, video, drawing etc are also important as a support to ensure the authenticity of the building. Building authenticity refers to the building design, workmanship, materials used and its settings. Setting involves the authenticity of interior layout and building exterior which reflects the local cultural values (Siti Norlizaiha, 2005).

iv. Restoration Works: At this stage, it is necessary to involve skilled craftsmen and experienced in the construction of wood and traditional buildings. Works should be based on recommended guidelines which including pre-conservation reports, current conservation reports, after-conservation reports. According to one of the practitioner in the reinstallation of the traditional building in Malaysia, Mohd Pauzi (2017) said the process of dismantling the traditional Malay timber building was in reverse order of the construction process, beginning with opening the roof components and then working on the floor wall and the last is the main structure. Before the dismantling work started, each part of the building should be marked with permanent ink so that it not be faded and can be identified during reinstallation work later (Brown, 2013). The proper drawing with dimension for each component is prepared shortly after the dismantling work is performed and before the reinstallation work starting. The loss or damage of some parts is expected in the translocation project. Therefore, the records such as component samples and measured drawing play a role to imitate the lost components.

v. Continuous Maintenance: ↓↓Maintenance plans are provided as a future reference to ensure that the building is managed and maintained properly from time to time using the correct method and technique. It is a plan to run a periodical maintenance. Maintenance plans for traditional Malay buildings should emphasize on precautions avoiding moisture as the main agent to wood decay. Moisture invites growth of fungus on wood which can affect dark stain and eventually decay. Compared with masonry building, traditional Malay buildings are built to suit with tropical climate with floor elevated from ground level. However, most cases in Malaysia, the maintenance of the neglected roof is the main cause of water dampness problems in traditional buildings. The water from the rain and the dew absorb to the timber component of the building through leakage roof. Therefore, the maintenance of the roof should be taken seriously for timber buildings. Figure 4 shows the 100 years old column made of Chengal timber (*Neobalanocarpus Heimii*) of Seri Menanti Palace (*Istana Seri Menanti*) In Negeri Sembilan decayed due to moisture penetration through roof leakage.

In addition, another precaution that should be considered for timber building maintenance is the limitation of the moving load on the building. There are conserved traditional buildings in Malaysia that limit loads of building by allowing a certain number of visitors entering at the same time.



Figure 4: Decayed chengal timber columns (H4 & J4) to be conserved in Seri Menanti Palace in Negeri Sembilan, Malaysia. Source: Author, 2017

Conclusion and Recommendation

Traditional buildings are safeguarded for the sake of identity and local history. The standard building reinstallation guideline needs to be applied to heritage listed buildings aims to maintain its authenticity in terms of material, workmanship, architecture, and setting. However, in addition, the guideline for reallocation can be applied to traditional buildings that are not as heritage listed but also relocated on the basis of commercial factors with local culture themed such as resorts and hotels. Some have also been moved because of the purchase of individuals and organizations as personal collections. The standard reinstallation guideline is important to help the project team to decide the workflow. This will reduce the experiment on site, part damages and this leads to minimizing the work time and cost. The proper specific guideline will help to manage the records and documentation for relocate and reinstallation works of a traditional timber building.

References

- Abdul Halim Nasir. (1985). *Pengenalan Rumah Melayu Semenanjung Malaysia*. Kuala Lumpur: Loyall Press Sdn. Bhd.
- Brown, A. (2013). *The Genius of Japanese Carpentry* (Revised Ed). Hong Kong: Tuttle Publishing
- Kamal, K. S., Ab Wahab, L., & Che Ahmad, A. (2004). Adaptation Design of Traditional Malay House to Meet the Requirements of Comfort Living in Modern Houses. *The Malaysian Surveyor*, (40), 43–48. Retrieved from <http://buildingconservation.blogspot.my/2007/03/adaptation-design-of-traditional-malay.html>
- Norhasandi Mat. (2010). *Ciri-ciri Fizikal Ruang Dalaman Rumah Melayu: Kajian Kes Rumah Bumbung Melayu Perak*. Universiti Sains Malaysia.
- Siti Norliza Harun. (2005). *Amalan Kerja Pemuliharaan Bangunan Bersejarah Di Malaysia*. Universiti Sains Malaysia, Penang, Malaysia.
- Siti Norliza Harun. (2011). Pemuliharaan Warisan Kebudayaan: Masjid Lama Kampung Kuala Dal, Kuala Kangsar, Perak. In *Seminar Antarabangsa Warisan Nusantara & Kraf Warisan*.
- Wulf Killmann, Sickinger, T., & Thong, H. L. (1994). *Restoring & Reconstructing The Malay Timber House*. Kuala Lumpur: Forest Research Institute of Malaysia (FRIM).
- Yuan, L. J. (2002). *The traditional Malay house*. Retrieved from elawmalaysia@igc.apc.org
- Zuraini Md Ali. (2016). *Mubin Sheppard: Pioneering Works in Architectural Conservation in Malaysia*. Kuala Lumpur: University Of Malaya Press.